Chapter Two: Description of Ignition Interlock Devices

What is the IID?

An IID is a breath alcohol test instrument mounted in an automobile, designed to allow a vehicle's ignition switch to start the engine only when a driver's breath alcohol concentration (BrAC) is below a predetermined alcohol set point. When the BrAC is at or above the alcohol set point, the device prevents the driver from starting the car. In Wisconsin, that alcohol set point is 0.02 g/210L. While several manufacturers in the United States produce IIDs, only three devices are currently approved for use in the state: semiconductor models produced by Guardian Interlock Systems and Lifesaver Interlock, Inc. and a fuel cell device manufactured by Consumer Safety Technology (CST). The IID is approximately hand-sized. Pictured below are several IID models:

Exactly how does the IID work?

When a driver enters a vehicle, he is prompted to give a breath sample by cues from the device. In the winter, the device may take a few minutes to warm up. To ensure that the sample is not created by mechanical means, some IIDs require a particular breath pattern to be followed; others measure the driver's breath temperature. A recent Pennsylvania study noted that the correct pattern of blowing/sucking/humming was one of the primary obstacles to proper IID use (USA Today 13 January 2003).

The device immediately displays a pass, fail, or inadequate sample reading. Passing allows the car to be started immediately. Three successive failures locks the ignition. The inadequate sample reading is caused by not providing enough air, stopping in the middle of the process, or failing to blow/suck/hum in the correct manner. If an inadequate sample is drawn, the device prompts you to try two more additional times.

The driver has three chances to provide a valid sample. If he fails to do so, the IID records a violations reset, requiring the driver to return the unit to the service provider within seven days or risk permanent lockout. When the driver successfully provides a sample below the set point, the car can start. Five minutes after ignition and then randomly in 5-30 minutes increments, the IID will request additional breath samples, called *rolling retests.* Rolling retests are designed to remove the possibility of a sober friend from assisting an intoxicated driver – the drunk driver cannot get far. Three consecutive refusals to provide a rolling retest, or three breath tests over the set point will start the horn honking and emergency lights flashing. This continues until the driver turns off the ignition, immobilizing the car for 15 minutes. This event, or any attempt to tamper with or subvert the IID, is recorded in the IID as a violations reset, requiring the driver to bring the IID in for service.

Routine service is required every 60 days, and failure to service will lead to a permanent lockout. Seven days prior to the service deadline, the driver sees or hears a reminder from the IID. At the servicing, stored unit data is downloaded and reviewed, device accuracy is checked, and a tampering inspection is performed.

How well do IIDs work – accuracy?

An IID is designed to perform in the relatively adverse environment of an interior of a car. The device is subjected to more difficult conditions than other law enforcement breath testing devices. The IID accounts for the imperfect conditions of a car's cabin by allowing the driver three chances to provide a valid breath sample.

The DSP Chemical Test Section is required by WI Trans 313 to evaluate and approve all IID used in the State. This evaluation is designed to test the performance claims made by the manufacturers, and to ensure the devices work as promised. The Section evaluated IIDs with fuel cell technology. Existing semiconductor technology is subject to interferences by non-alcohol compounds, which may result in false positives and is no longer state-of-the art technology. One fuel cell models has met the Section's standards. The Section is continuing to work with manufacturers to identify fuel cell IIDs that meet statutory requirements for performance, and is hopeful that additional fuel cell models will be available to drivers within the year.

How well do IIDs work – security and tampering?

At first glance, the IID sounds rather easy to circumvent. If one has to blow into a nozzle to start the car, there appear to be several easy ways around this requirement. Have a friend blow into the IID; inflate a balloon before you drink and attach it to the device; keep some sort of hand pump around to trick the IID.

However, there is a statutory requirement that any IID approved for use in Wisconsin institute *rolling retests.* That is, five minutes after you have started your car, the IID requires another breath test. Moreover, the IID continues to require retests every 5-30 minutes, obviating any chance that a friend or stranger could assist a drunk driver in getting very far.

As far as mechanical methods of tricking the IID, the current generations of IIDs are too clever for that. Some require the user to hum while breathing into the unit; or the IID is sensitive to the temperature of the air being tested, so that cold air from a pump or balloon will result in an aborted test.

Although, someone with sufficient technical knowledge could remove the IID while still allowing the car to start, this tampering information is instantly recorded in the IID, and will be transmitted to the vendor at the servicing time.

Anecdotal evidence suggests that subversion of the IID mechanism is uncommon. But the more pressing issue is not subverting the device, but avoiding IID use altogether.

Why Ignition Interlock Devices?

Who is the IID protecting? Is it a tool to help a recidivist drunk driver alter behavior in the future? Are IIDs implemented to protect the public from the indiscriminate danger that drunk driving presents to passengers and other motorists?

Does disallowing him the means to perpetrate another crime help the recidivist driver? This sort of 'paternalism' is widely practiced in varying degrees within the government; a simple example is providing tax incentives via IRAs to encourage retirement savings. IIDs can be seen as a way to help people make better, safer decisions by introducing a new incentive.

With drunk driving, though, the concern is more often for the public at large. The drunk driver continually distinguishes himself as an indiscriminate threat to anyone in his vicinity, including non-drivers. Thus the IID is really more of a public safety measure: the driver is removed from endangering other drivers when he is deemed unfit to operate a vehicle. Put another way, when the driver drinks, the state rescinds the driver's privilege to use the public goods (roads) because of his breach of a social contract.

Finally, the IID can be seen as a cost-effective utilitarian program. Incarcerating recidivist drunk drivers, while highly effective at keeping them off the road, is inordinately costly, especially in an era of burgeoning criminal caseloads and scant jail space. Since the cost of the IID is borne by the participant, it could be a good deal for the state in terms of saving lives and jail space via the use of technology. Incarceration for drunk driving is declining nationwide, largely due to its expense (feeding, supervising, and housing the offender) and dubious long-term benefits.

Who pays for IIDs?

It is important to note that when an offender receives a court order for IID installation, *the offender is required to pay for the installation and the monthly maintenance fee*. The total cost for one year of IID use can be close to $1000: about 120 dollars for installation and a 70-dollar monthly service fee. This cost has two direct implications in our evaluations. First, most IID orders in Wisconsin are not complied with (see Figure 8); a significant cost to the driver, along with limited sanctions for non-compliance, could be a contributing or even defining factor in this non-compliance. Secondly, due to their cost, IIDs may be assigned to higher income individuals. If that is the case, and IIDs work, then bias may exist: IIDs succeed not because of the device, but because the sample has greater resources for other treatment, taxi rides, or a second automobile.

Is the cost of IIDs prohibitive? At first glance, $1000 dollars a year is a large sum for almost anyone. Moreover, the data shows that IIDs are usually assigned to middle-aged working-class men, for whom this amount may be burdensome. However, having an IID also creates an offset. One estimate in southern Wisconsin suggests that the repeat drunk driver spends, on average, $1500 annually drinking at his favorite tavern or restaurant (Anthony 2003).

How IID law developed – federal and state laws

In 1993, the federal government instituted federal repeater requirements, where states were required to sanction drivers with three or more drunk driving offenses. In response, Wisconsin Act 277 created IID license and approval processes within the state, and required IIDs or some other sanctions in certain repeat offender circumstances. Initially, an IID was an option only for third or subsequent offenders: the judge could choose between vehicle seizure, vehicle immobilization, or an IID. The fourth federal sanction, registration suspension, was not implemented in Wisconsin.

In 1999, Act 109 was passed, an omnibus bill that changed the statutory scope of IIDs. For the first time, the IID became an option for second offenders, at the discretion of the court. Since second offenses are more numerous than all third and subsequent combined, this change greatly broadened the scope of IID use. IID orders jumped 73 percent in 2002 from the year before. Also, the IID license restriction was changed to a person's driving privilege, rather than to a particular automobile.

An important change was recently made at the federal level regarding IID use. Under the Transportation Equity Act for the 21st Century, second and subsequent offenders have their licenses revoked for a year. After that year, the license is reinstated with either an IID or an immobilization order on their vehicle. This is a crucial point: the literature review finds that IIDs are most effective in the year immediately following arrest and conviction for OWI. By mandating a one-year waiting period, this law may reduce IID efficacy. Also, the federal repeater standards require that if two OWI offenses take place within a five-year period, the offender must receive either an IID or seizure. These changes were incorporated into Wisconsin law in 2001 Act 16, another omnibus budget bill.

Currently, the law offers IIDs at the discretion of the judge for second offense Operating While Intoxicated convictions. For third or greater offense, the court *must* mandate one of the following: an IID; vehicle immobilization; or vehicle seizure. As shown in Figure 1, IIDs have far outstripped the other options in terms of court orders.

Also, IIDs are continuing to grow in popularity. *From 2001 to 2002 IID court orders increased almost 75%*. Seizure and immobilization have proven to be difficult to implement. Because of a lag time between a seizure decision and carrying out the seizure, offenders have been very wise about getting rid of a nice car and acquiring a junker. Thus the state was spending more money seizing vehicles than it was reaping from their sales. Similar problems exist for immobilization. Also, immobilization is seen as a harsher treatment than IIDs, since the latter allows non-impaired driving while the former creates hardship by rescinding driving privileges altogether.

Finally, IIDs are especially attractive to a financially constrained state. Seizure has often proven to be an ineffective use of law enforcement resources, and immobilization can also be costly. Requiring the offender to pick up the tab on the IID (effectively paying for the privilege of driving) looks like a good deal for the state.

Figure 1: Vehicle Sanction Orders Reported to WisDOT 1993-2002